Title: The production method of tea drink

Abstract:

After an extract of tea is enzymatically processed, alcohol is added to the processing liquor, and the solid and the liquid are separated. The tea drink produced by this method does not form any sediment even when stored for a long time.

The present invention involves a production method of a tea drink that does not give rise to sediment even when stored for a long period.

Prior well-known methods of isolating the sediment in sake involved heating the raw sake at around 65°C, cooling, adding kakishibu (a tannin-containing material extracted from unripe persimmon fruit juice) and gelatin, stirring, standing to allow the sediment to accumulate at the bottom of the vessel, and removing it through filtration. In case of producing a wine, the wine is chilled below 5°C, mixed with tartaric acid, and filtered to remove the sediment.

Recently, the tea drink is under development. However, since the sediment formed during the storage brings a bad effect on the quality of a tea drink, it is desirable to develop tea drinks which do not produce sediment.

Till now, a tea drink has yet to be developed which can be stored without forming any sediment even for a long time.

According to the method of the present invention, a tea drink that can be stored without forming any sediment even for a long time can be produced by adding alchohol to the resulting processing liquor after the enzymatic processing of an extract of tea, and after solid-liquid separation, removing the alcoholic component in the separated liquor if necessary.

The extracts of tea used as raw materials are exemplified as the water-infusion extract, and concentrated or dried forms thereof, of teas such as oolong tea, jasmine tea, Madai tea or Japaneses tea, etc. The water-infusion extract of tea and concentrated or dried forms thereof are generally produced by the following process: the tea leaves are steeped in hot water (50~100°C) and then removed to obtain a tea liquor comprising the infusion extract; the tea liquor is concentrated e.g. by heating to obtain a concentrate of the extract, and further drying e.g. by heating, lyophilization or spray drying is performed to result in a dried form of the exact.

The materials produced by the above-said methods can be used as the exact of tea, though generally commercial products produced by the same method are used for that

purpose.

For the enzyme, a saccharifying compound enzyme composed mainly of α-amylase and glucoamylase (e.g. a commercial product リアザイム(produced by Kyowa マイルス Inc.) etc.), and a pectinase (e.g. commercial product sucrase N (produced by Sankyo Co., Ltd) etc.), among others, can be used alone or in mixture. The amount of the enzyme used is at least 2500U for 100g of the solid extract of tea, and taking processing efficiency or price of the enzymeinto account, the optimal amount of the enzyme is in the range of 25000~500000U.

The enzymatic processing is carried out in an aqueous medium in a temperature range of 10~60°C, preferably 20~35°C, for a period of at least 1 hour, preferably 10~24 hours, at pH 3~8, preferably pH 4~7.

For the alcohol may be used alcohols for use as raw material, or distilled alcohols (such as spirits, whisky, and brandy), etc. The alcoholic concentration of the liquor after the addition of alcohol is at least 50%, preferably in the range of 45~60%.

After the addition of alcohol, the mixture is allowed to stand at 5~35°C for at least 5 hours, preferably 20~24 hours, before the solid and the liquid are separated. The solid-liquid separation is carried out by centrifugation separation (3000~10000 rpm, 2~20 minutes), and filtration (fine filtration: by using filters having a pore size of around 0.5μm), etc.

If the alcoholic component in the separated liquor is desired to be removed, this can be done by using a spinner vacuum evaporator, etc.. Water is added to the above-said separated liquor or the liquid from which the alcoholic component is removed, so that a tea drink having an alcoholic concentration of not more than 45% is obtained. When necessary, sterilization may be carried out at 60~70°C for 5~20 minutes.

The effect of whether or not the extract of tea is enzymatically processed on the amount of sediment formed is studied. The experimental example is demonstrated as follows:

Experimental example:
To 1kg of an extract A-1 of oolong tea (produced by Kyowa Koryo Kosan(協和香料興産株式会社)), (1) 2g of リアザイム,(240000U of α-amylase, 120000U of glucoamylase); (2) 2g of sucrase N (3000000 PGU of pectinase) or (3) no enzyme is added. After standing at 20°C for 24 hours (pH is not adjusted), 1 L of 95% alcohol is added. The mixture is stirred and let to stand at 20°C for 24 hours. Then the sediment is separated by centrifugation (7000rpm, 15 minutes) and its amount (the amount of the sediment formed) measured.

The results are as follows:

enzyme	the amount of the sediment formed (g)
(1) リアザイム	50
(2) sucrase N	20
(3) no enzyme	592

The above result demonstrates that the extract of the tea as the raw material forms much less sediment after the enzymatic processing than without enzymatic processing. As a result, less sediment is discarded and most of the extract of the tea can be efficiently used.

The examples are illustrated as follows:

Example 1

2g of リアザイム(240000U of α-amylase, 20000U of glucoamylase) was added to 1kg of the extract A-1 of oolong tea (solid content 21%), and this was allowed to stand at 20°C for 24 hours (pH not adjusted). Subsequently 1 L of 95% alcohol was added, and the mixture was stirred and allowed to stand at 20°C for 24 hours. The mixture was then separated by centrifugation (7000rpm, 15 minutes) to obtain a clear liquid (with an alcoholic concentration of 48%).

This clear liquid was diluted with water to obtain a tea drink having an alcoholic concentration of 5%.

In addition, as control examples, tea drinks having an alcoholic concentration of 5% were formulated by the above-said method (1) without enzymatic processing, or (2) without enzymatic processing and without the processing of adding alcohol (20°C, 24 hours), the other steps being the same, and alcohol was added to the final product.

Examination of the sediment formation and tasting evaluation of the drink were carried out as follows:

The drink was loaded in 180ml flasks, and sterilized at 65°C for 10 minutes. The flasks with said drink were stored under 5°C, room temperature and 40°C, respectively, and subsequently the sediment formation in the drink was visually observed. The drink produced by the method of the present invention did not give rise to sediment even after 6 mouths of storage.

In the controls (1) and (2), sedimentation occurred under each temperature after 3 weeks and 7 days, respectively. In addition, the tasting evaluations were carried out immediately after the sterilization and after the storage of 6 months under room temperature. The results are shown in Table 1.

Table 1

Tea drink	Storage period	Test Panel						Total
		A	B	C	D	E	F	
the method of the present invention	Immediately after the sterilization	2	3	2	3	2	2	14
Control (1)		3	3	2	3	3	2	16
Control (2)		3	3	2	3	2	2	15
the method of the present invention	Stored for 6 months	3	3	2	2	3	2	15
Control (1)		3	3	3	3	3	3	18
Control (2)		3	3	3	3	3	3	18

Note: Evaluation was done using a 5-level method. And the same method was used for the other evaluations hereinafter.

1-very good; 2-good; 3-normal; 4-bad; 5-very bad.

From Table 1, it is clearly seen that the tea drink produced by the method of the present invention has an equal or better quality than the control tea drinks.

Examples 2-7

Tea drinks having an alcoholic concentration of 5% were produced by the same steps as Example 1, except for using the enzymes listed in Table 1 instead of 2g of リアザイム. The formation of sediment in the storage under 5°C, room temperature and 40°C of the drink were observed using the same method as Example 1, and the results are shown in Table 2.

Table 2

Example No.	Enzyme	The amount used (g)	Formation of sediment (5°C, room temperature, 40°C)
2	Sucrase N	2 (300000 PGU of pectinase)	No sediment is formed under any temperature after 6 months
3	リアザイム Sucrase N	1 (120000U of α-amylase 60000U of glucoamylase) (150000 PGU of pectinase)	Same as above
4	Sucrase N	1 (150000 PGU of pectinase)	Sediment is formed under each temperature after 5 months
5	リアザイム	1 (120000U of α-amylase 60000U of glucoamylase)	Same as above
6	Sucrase N	0.5 (75000 PGU of pectinase)	Sediment is formed under each temperature after 1 month
7	リアザイム	0.5 (60000U of α-amylase 30000U of glucoamylase)	Sediment is formed under each temperature after 5 months

In addition, the tasting evaluation was performed on the drink obtained in Example 3 using the same method as Example 1. Control example (2) used the same enzyme as Example 1. The results are shown in Table 3.

Table 3

Tea drink	Storage period	Test Panel A	B	C	D	E	F	Total
the method of the present invention	Immediately after the sterilization	3	3	2	3	2	-	13
Control (2)		3	3	3	2	3	-	14
the method of the present invention	Stored for 6 months	3	2	3	2	3	2	15
Control (2)		3	3	3	2	3	3	17

Examples 8-9

Tea drinks having the alcoholic concentration of 5% were produced by the same steps as example 1 except that alcohol was added as shown in Table 4 in an amount 95% of that of Example 1 to the liquor before centrifugation and the clear liquid after separation, respectively. The formation of sediment in the drinks were observed as Example 1, and the results show that sediments were formed after 2 months.

Table 4

Example	The amount of the added alcohol (ml)		Total (ml)
	Liquor before centrifugation separation	Clear liquid after centrifugation separation	
8	500	500	1000
9	750	250	1000

Example 10

A tea drink having an alcoholic concentration of 5% was produced by the same steps as Example 1 except that the extract of oolong tea in the Example 1 was substituted by jasmine tea extract No. 22557 (Kyowa Koryo Kosan). The formation of sediment was observed as Example 1, and the results show that no sediment was formed even after 6 months.

Example 11

A clear liquid having an alcoholic concentration of 48% was produced by the same method as Example 1. This clear liquid was diluted with water to obtain a tea drink having an alcoholic concentration of 40%. The formation of sediment was observed as Example 1, and the results show that no sediment was formed even after 6 months.

Example 12

0.1g of リアザイム(120000U of α-amylase, 6000U of glucoamylase) and 0.1g of sucrase N (15000 PGU of pectinase) are added to 100ml of the extract A-1 of oolong tea (solid content: 21%). After stirring, the mixture was allowed to stand at 20°C for 24 hours. 100ml of 95.6% alcohol was then added, and after stirring, the mixture was left at 20°C for 24 hours before being filtered by a membrane filter of 0.4μm. 980ml water was added to 20ml of the separated liquor (alcoholic content: 47.4%) to make a diluted liquor (alcoholic content: 0.9%) of 1 L. This diluted liquor was filtered through a membrane filter of 0.4μm to produce a tea drink (comprising 1% of the

extract A-1 of oolong tea (hereinafter referred to as the extract component)).

As a control, 100ml of the extract A-1 of oolong tea was filtered through membrane filter. To 10ml of the separated liquor was added 990ml water to obtain a diluted liquor of 1 L. This diluted liquor was filtered through a 0.4μm membrane filter to produce a tea drink (with 1% of the extract component) (Control 1).

In the same way as above, リアザイム and sucrase N were added to 100ml of the extract A-1 of oolong tea. The mixture was leave at 20°C for 24 hours after stirring.

After filtration through a membrane filter of 0.4μm, 10ml of the separated liquor was used to produce the tea drink (with 1% of the extract component) (Control 2) using the same method as Control 1.

100ml of 95.6% alcohol was added to 100ml of the extract A-1 of oolong tea, and the mixture was left at 20°C for 24 hours, and subsequently filtered through a membrane filter of 0.4μm. 20ml of the separated liquor was used to produce a tea drink (Control 3) (containing 1% of the extract component) in the same way as the method of the present invention in Example 12.

The tea drinks produced by the method of the present invention (the tea drink of the present invention) and the tea drinks of Controls 1-3 were loaded into transparent bottles of 180ml, sealed, sterilized by heating at 65°C for 10 minutes, and then allowed to stand at 5°C. The formation of sediment were visually observed and the results are shown in Table 5.

Table 5

	1 week	2 weeks	1 month	2 months	3 months	4 months	5 months	6 months
Tea drink of the present invention	-	-	-	-	-	-	-	-
Control 1	+	+	+	+	+	+	+	+
Control 2	-	±	+	+	+	+	+	+
Control 3	-	-	-	±	+	+	+	+

Note: - indicates no sediment formation

± indicates slight sediment formation

+ indicates sediment formation

(The following examples used the same evaluation method).

From the table 5, it is clearly shown that the tea drink produced by the method of the present invention would not form any sediment even after 6 months.

In another aspect, Tables 6 and 7 show the organoleptic evaluations of the tea drink of the present invention and the drinks of the control examples 1-3 immediate after the sterilization and after 6-month storage at 5°C.

Table 6 The organoleptic evaluation immediately after the sterilization

	Test Panel						total	average
	A	B	C	D	E	F		
Tea drink of the present invention	3	2	3	2	3	2	15	2.5
Control 1	3	2	3	3	3	3	17	2.8
Control 2	3	2	3	3	3	2	15	2.5
Control 3	3	2	3	3	3	3	17	2.8

Table 7 The organoleptic evaluation after 6 months of storage

	Test Panel						total	average
	A	B	C	D	E	F		
Tea drink of the present invention	2	2	3	2	2	3	14	2.3
Control 1	4	3	4	3	3	3	20	3.3
Control 2	3	3	4	3	3	3	19	3.2
Control 3	3	3	4	3	3	3	19	3.2

Tables 6 and 7 clearly demonstrate that from the organoleptic evaluation immediately after the sterilization, the tea drink produced by the method of the present invention is found to be almost the same as the tea drinks of control examples 1-3, and the tea drink produced by the method of the present invention is better than those of the control examples after 6 months of storage.

Example 13

100ml of separated liquor produced by the same method as Example 12 was concentrated by a spinner vacuum evaporator (produced by the Tokyo Physicochemical Machine and Material Inc.), and 50ml of concentrated liquor was

produced (with 4.7% of alcoholic component).

To 10ml of the concentrated liquor was added 990ml of water, resulting in 1 L of diluted liquor (with 0% of alcoholic component). This diluted liquor was filtered through a membrane filter of 0.4μm to produce the tea drink (with 1% of extract component). As control examples, 100ml of 95.6% alcohol was added to 100ml of the extract A-1 of oolong tea, and the mixture was left at 20°C for 24 hours, and then filtered by a membrane filter of 0.4μm. 100ml of the separated liquor was used to produce a tea drink (Control 3) (containing 1% of extract component, and 0% of alcoholic component) by the same method as above.

In the following, the sediment formation was observed using the same method as Example 12, and the organoleptic evaluations were carried out. The results are shown in Tables 8-10.

Table 8

	1 week	2 weeks	1 month	2 months	3 months	4 months	5 months	6 months
Tea drink of the present invention	-	-	-	-	-	-	-	-
Control 1	+	+	+	+	+	+	+	+
Control 2	-	±	+	+	+	+	+	+
Control 3	-	-	-	±	+	+	+	+

Note: Control examples 1 and 2 used the tea drink produced by Example 12 (the same hereinafter).

Table 9 The organoleptic evaluation immediate after the sterilization

	Test Panel						Total	Average
	A	B	C	D	E	F		
Tea drink of the present invention	3	2	3	2	3	2	15	2.5
Control 1	3	2	3	3	3	2	16	2.7

Control 2	3	2	3	3	3	2	16	2.7
Control 3	3	2	3	3	3	2	16	2.7

Table 10 The organoleptic evaluation after 6 months of storage

	Test Panel						Total	Average
	A	B	C	D	E	F		
Tea drink of the present invention	3	2	3	2	3	3	16	2.7
Control 1	4	3	4	3	3	3	20	3.3
Control 2	3	3	3	3	3	3	18	3.0
Control 3	3	3	4	3	3	3	19	3.2

What is claimed is:

1. A method of producing tea drink, wherein after an extract of tea is processed with a saccharifying-type compound enzyme or a pectinase, an alcohol is added to the processing liquor and the solid and the liquid are separated, and if necessary, the alcoholic component in the separated liquor is subsequently removed.

2. The method according to Claim 1, wherein the extract of tea is a water infusion extract, and concentrated or dried forms thereof, of oolong tea, jasmine tea, Madai tea or Japanese tea.

3. The method according to Claim 2, wherein the temperature of the water during infusion extraction is 50~100°C.

4. The method according to Claim 1, wherein the enzyme is used in an amount of at least 2500U of the enzyme relative to 100g of the solid component of the extract of tea.

5. The method according to Claim 4, wherein the amount of the enzyme is 25000~500000U.

6. The method according to Claim 1, wherein the enzymatic processing is conducted in an aqueous medium at 10~60°C and pH 4~7 for 10~24 hours.

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(57)摘要

将茶的提取物经酶处理后，在该处理液中添加酒精，并将固液分离，用此方法制得的茶饮料长时间保存也不会产生沉渣。

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权 利 要 求 书

1.茶饮料的制法，其特征在于茶的提取物用糖化型复合酶或果胶酶处理后，在该处理液中添加酒精，固液分离，随后，如果需要还可除去分离液中的酒精成分。

2.根据权利要求1 所述的制法，其特征在于茶的提取物是乌龙茶、茉莉花茶，马黛茶或日本茶的水浸渍萃取物及其浓缩物，干燥物。

3.根据权利要求2 所述之制法，其特征在于浸渍萃取时的水温为50～100 ℃。

4.根据权利要求1 所述之制法，其特征在于酶的使用量为，相对于100g茶提取物的固态成分使用2500 U以上的酶。

5.根据权利要求4 所述之制法，其特征在于酶的使用量为2.5 ～50万U。

6.根据权利要求1 所述之制法，其特征在于酶处理是在水性介质中，在10～60℃，PH 4～7 条件下处理10～24小时，

茶饮料的制法

本发明涉及即使是长期保存也不会产生沉淀的茶饮料制备方法。

以前，众所周知，清酒沉淀的分离方法是将生酒在65℃左右加温，冷却后添加柿漆和明胶，然后搅拌静置，沉淀存积在容器的下部，再将它过滤除去。如果是制作葡萄酒，则将葡萄酒在5 ℃以下冷却，然后和酒石酸一起，过滤并除去沉淀。

近来，正在开发茶饮料，但是由于保存时产生沉淀给茶饮料的质量带来坏影响，因而希望研究开发不产生沉淀的茶饮料。

至今还没有研究开发出即使长期保存也不会产生沉淀的茶饮料。

根据本发明方法，将茶的提取物经酶处理后，将酒精添加到该处理液中，固液分离后，如果需要，则将分离液中的酒精成分除去，于是就能得到即使长期保持也不会发生沉淀的茶饮料。

作为原料用的茶的提取物，可列举出乌龙茶，茉莉花茶，马黛茶、日本茶等茶的水浸渍提出物及其浓缩物，干燥物。茶的水浸渍提出物及其浓缩物、干燥物，一般是用以下方法制得。即，将茶叶浸入热水（50～100℃）中后，除去茶叶则得到含有浸渍提取物的茶液。然后加热等浓缩茶液，得到浓缩物，再加热干燥冷冻干燥、喷雾干燥等干燥方法则可得到干燥物。

茶的提取物也可使用上述方法制得的物料，但一般都使用同样方法制得的市售商品。

酶可单独或混合使用以 α- 淀粉酶及葡萄糖淀粉酶为主体的糖化型复合酶（例如市售品：リアザイム（协和マイルス公司制）等），果胶酶（例如市售品蔗糖酶N（三共制药公司制）等）等。相对于100g固态茶提取物，其使用量为2500 U以上，如果考虑酶的处理效率，价格等，最希望

的使用量范围为2.5 万～50万U。

在水性介质中进行酶处理温度为10～60℃，最好是20～35℃；时间为1 小时以上，最好是10～24小时；PH3 ～8 ，最好 PH4 ～7 。

酒精可使用原料用酒精，蒸馏酒精（烧酒、威士忌，白兰地等）等，添加酒精后液体中的酒精浓度为50% 以上，最好的范围是45～60% 。

添加酒精后，在5 ～35℃下放置5 小时以上，最好是20～24小时后，再固液分离。固液分离是用离心分离(3000 ～1 万rpm ，2 ～20分钟)、过滤（精密过滤：使用孔径为0.5 μ左右的过滤器 ）等进行。

如果希望除去分离液中的酒精成分，则可用旋转式真空蒸发器等除去它。在上述得到的分离液或除去酒精成分的液体中加水得到酒精浓度为45% 以下的茶饮料。还可以根据需要在60～70℃时进行5 ～20分钟的杀菌。

关于茶的提取物是否进行酶处理对沉渣产生量的影响进行了研究。以下示出该试验例。

试验例：

在1kg 乌龙茶提取物 A-1 （协和香料公司制 ）中（1）添加リアザイム 2g（ α淀粉酶24万U、葡萄糖淀粉酶12万U ），（2）添加蔗糖酶N 2g（果胶酶300 万 PGU ）或（3）不添加酶，在20℃放置24小时（ PH不调整 ）。继而，添加95% 的酒精11 、搅拌后在20℃放置24小时。然后离心分离（ 7000rpm ，15分钟 ），测定分离的沉渣量（ 沉渣产生量 ）

其结果如下：

酶	沉渣产生量(g)
(1)リアザイム	50
(2) 蔗糖酶N	20
(3) 不添加酶	592

上述结果明确表示：作为原料茶的提取物经过酶处理比不经酶处理产生的沉渣量要少得多，因而沉渣的拾弃量也少，可以有效地利用大部分茶

的提取物。

以下示出实施例

实施例1

在1kg 乌龙茶提出物A-（固态成分为21%）中添加リアツ什（α-淀粉酶24万U、葡萄糖酶（2万U）2g，在20℃放置24小时（PH不调整）。继而添加95% 酒精1l，搅拌后，在20℃放置24小时。然后，离心分离(7000rpm，15分钟），得到澄清液（澄清液的酒精浓度为48%）。

用水稀释该澄清液得到酒精浓度为5 % 的茶饮料。

另外，作为对照例。对上述方法中(1) 不进行酶处理的情况，(2) 不进行酶处理和添加酒精处理（20℃，24小时），而其它步骤均相同，作为制品最后添加酒精的情况分别调制了酒精浓度为5 % 的茶饮料。

对该饮料的沉渣产生状况及品尝试验按如下方法进行

将该饮料装入180ml 的烧瓶中，在65℃时杀菌10分钟。然后将装该饮料的容器瓶在5 ℃、室温及40℃下保存，目视观察其沉渣产生状况。用本发明方法得到的饮料在各种温度下即使保存6 个月也不会产生沉渣。

而作为对照的(1) 及(2)，在各种温度下经过3 周和7 日后分别产生沉渣。此外在杀菌后即刻以及室温下保存6 个月后进行品尝试验。表1 中示出其结果。

表1

茶饮料	保存时间	试验盘 A	B	C	D	E	F	合计
本发明方法	杀菌	2	3	2	3	2	2	14
对照 (1)	后即	3	3	2	3	3	2	16
对照 (2)	刻	3	3	2	3	2	2	15
本发明方法	6	3	3	2	2	3	2	15
对照 (1)	个	3	3	3	3	3	3	18
对照 (2)	月	3	3	3	3	3	3	18

注：评价方法（按5点法评价）（以下评价方法相同）。

1表示非常好，2表示好，3表示一般，

4表示不好，5表示非常坏。

由表1可清楚看出，按本发明方法制得的茶饮料与对照茶饮料相比其质量相等或更优良。

实施例2-7

实施例1中除了用表1示出的酶来代替2g リアザイム 外，其余都与实施例1相同，制得酒精浓度为5％的茶饮料。对该饮料，用和实施例1相同方法观察在5℃，室温和40℃保存时沉淀产生的状况，其结果示于表2。

表2

实施例	酶	使用量 (g)	沉渣产生的状况 (5℃，室温，40℃)
2	蔗糖酶N	2 (果胶酶30万 PGV)	经6 个月后在各温度下，都没有产生沉渣
3	ｲｱｻﾞｲﾑ 蔗糖酶N	1 (α- 淀粉酶12万U 葡萄糖淀粉酶6 万U) (果胶酶15万PGU)	同上
4	蔗糖酶N (果胶酶15万 PGU)	1	5个月以后，在各温度下都产生沉渣
5	ｲｱｻﾞｲﾑ	1 (α- 淀粉酶12万U 葡萄糖淀粉酶6 万U)	同上
6	蔗糖酶N （果胶酶7.5 万U）	0.5	经一个月后各温度下都有沉渣
7		0.5 (α- 淀粉酶6 万U 葡萄糖淀粉酶3 万U)	5 个月后在各温度下都有沉淀

此外，对由实施例3 得到的茶饮料，用与实施例1 同样的方法进行品尝试验。对照例(2) 与实施例1 中用的相同酶。其结果示于表3 。

表3

茶饮料	保存期间	试验盘						
		A	B	C	D	E	F	合计
本发明方法	杀菌后	3	3	2	3	2	-	13
对照(2)	即刻	3	3	3	2	3	-	14
本发明方法	6个月	3	2	3	2	3	2	15
对照(2)		3	3	3	2	3	3	17

实施例8 ～9

除了按表4 所示那样分别在离心分离前的液体和分离后的澄清液中添加实施例1 的95% 的酒精使用量外，其余步骤均与实施例1 相同，制得酒精浓度为5 % 的茶饮料。与实施例1 相同，对该饮料观察沉渣的产生状况，结果表明2 个月后发生沉渣。

表 4

实施例	酒精添加量（ml） 离心分离前的液体	离心分离后的澄清液	合计 (ml)
8	500	500	1000
9	750	250	1000

实施例10

在实施例1 中，除用茉莉化茶提取物No. 22557（协和香料公司制）代替乌龙茶提取物外，其它均与实施例1 相同，制得酒精浓度为5 % 的茶饮料。与实施例1 同样观察沉渣的产生状况，结果表明即使经过6 个月后也不发生沉渣。

实施例11

用与实施例1 相同的方法制得酒精浓度48% 的澄清液，将它用水稀释得到酒精浓度40% 的茶饮料。与实施例1 相同对该饮料的沉渣产生状况进行观察，结果表明经过6 个月后也不会产生沉渣。

实施例12

在100ml 乌龙茶提取物A-1中（固态成分为21% ）添加0.1g ｸﾘｱｾﾞｲﾑ（α淀粉酶： 12万U，葡萄糖淀粉酶：6 千U ）以及0.1g蔗糖酶N（果胶酶1.5 万U ），搅拌后，在20℃放置24小时。随后添加95.6% 酒精100ml，搅拌后在20℃放置24小时。然后，用0.4 μm 的薄膜过滤器过滤。取分离液20ml（酒精成分为47.4% ），将980ml 水加入，制得稀释液1l（酒精成分为0.9 % ）。再将该稀释液用0.4 μm 的薄膜过滤器过滤，制得茶饮料（含有1 % 的乌龙茶提取物A-1（以下称提取成分）]

此外，作为对照例，将100ml 乌龙茶提取物 A-1用薄膜过滤器过滤。取出10ml分离液，将990ml 水加入其中得到稀释液11。再将该稀释液用0.4 μm 的薄膜过滤器过滤，制得茶饮料（提取成分为1 %）（对照1）。

与上述做法相同，在100ml 乌龙茶提取物 A-1中添加 和蔗糖酶N，搅拌后，在20℃放置24小时。

然后，用0.4 μm 的薄膜过滤器过滤，取分离液10ml，以下按对照1中同样的做法制得茶饮料（提取成分为1 %）（对照2）

在100ml 乌龙茶提取物 A-1中添加95.6% 的酒精100ml，在20℃放置24小时。然后用0.4 μm 的薄膜过滤器过滤。取分离液20ml，以下按与实施例12中的本发明方法同样的做法制得茶饮料（提取成分1 %）（对照3）。

将用本发明方法制得的茶饮料（本发明茶饮料）及对照例1～3 的茶饮料装在180ml 的透明瓶中，密封后在65℃加热杀菌10分钟，然后在5 ℃静置，目视观察沉渣的产生情况。其结果示于表5 。

表 5

	1周	2周	1个月	2个月	3个月	4个月	5个月	6个月
本发明茶饮料	-	-	-	-	-	-	-	-
对照1	+	+	+	+	+	+	+	+
对照2	-	±	+	+	+	+	+	+
对照3	-	-	-	±	+	+	+	+

注：- 不产生沉渣

±稍微产生沉渣

+ 产生沉渣

（以下用同样的评价方法）

由表清楚表明，用本发明方法制得的茶饮料即使经过6 个月也不会产生沉渣。

其次，表6 和表7 示出本发明茶饮料和对照例1 ～3 的饮料在刚刚杀菌后以及在5 ℃时贮存6 个月后的感官评价。

表6　　杀菌后立即进行的感官评价

	试验盘 A	B	C	D	E	F	合计	平均
本发明饮料	3	2	3	2	3	2	15	2.5
对照1	3	2	3	3	3	3	17	2.8
对照2	3	2	3	3	3	2	15	2.5
对照3	3	2	3	3	3	3	17	2.8

表7　　贮存6 个月后进行的感官评价

	试验盘							
	A	B	C	D	E	F	合计	平均
本发明茶饮料	2	2	3	2	2	3	14	2.3
对照1	4	3	4	3	3	3	20	3.3
对照2	3	3	4	3	3	3	19	3.2
对照3	3	3	4	3	3	3	19	3.2

表2 和表3 清楚说明，从杀菌后立即进行感官评价中得知：用本发明方法制得的茶饮料与对照例1 ～3 的茶饮料几乎没有差别，而贮存6 个月后本发明方法制得的茶饮料比对照例好。

实施例13

将100ml 用实施例12相同方法制得的分离液经旋转真空蒸发器（东京理化机器和材料公司制 ）浓缩，制得50ml浓缩液（酒精成分为4.7 % ）。

取10ml浓缩液，将990ml 水加入，得到稀释液11 （酒精成分为0 % ）。再将该稀释液用0.4 μm 的薄膜过滤器过滤， 制得茶饮料（提取成分为1 % ）。此外， 作为对照例，在100ml 的乌龙茶提取物A-1中添加95.6% 酒精100ml ，在20℃放置24小时。然后，用0.4 μm 的薄膜过滤器过滤。取100ml 分离液，然后按上述同样的做法制得茶饮料（提取成分为1 % ，酒精成分为0 % ）（对照3 ）。

以下，用实施例12同样的方法观察沉渣的产生状况，并进行感官评价。其结果示于表8 ～10。

表8

	1周	2周	1个月	2个月	3个月	4个月	5个月	6个月
本发明饮料	-	-	-	-	-	-	-	-
对照1	+	+	+	+	+	+	+	+
对照2	-	±	+	+	+	+	+	+
对照3	-	-	-	±	+	+	+	+

注：对照例1 和2 使用的是由实施例12制得的茶饮料（以下相同）。

表9　　杀菌后立即进行的感官评价

	试验盘							
	A	B	C	D	E	F	合计	平均
本发明茶饮料	3	2	3	2	3	2	15	2.5
对照1	3	2	3	3	3	2	16	2.7
对照2	3	2	3	3	3	2	16	2.7
对照3	3	2	3	3	3	2	16	2.7

表10　　贮存6 个月后进行的感官评价

	试验盘							
	A	B	C	D	E	F	合计	平均
本发明茶饮料	3	2	3	2	3	3	16	2.7
对照1	4	3	4	3	3	3	20	3.3
对照2	3	3	3	3	3	3	18	3.0
对照3	3	3	4	3	3	3	19	3.2